

REMARKS

The Application presently includes claims 1-33. Drawings were objected to under 37 C.F.R §1.83(a). Claims 1-4, 6, and 8-10 were rejected by the Examiner under 35 U.S.C. §102(b) as being anticipated by Cheon, U.S. Patent No. 5,731,954 ("Cheon '954"). Claims 11-20, 22, 24-28, and 30-33 were also rejected by the Examiner as being anticipated by Cheon '954 under 35 U.S.C. §102(b). No new matter has been added. Applicant respectfully traverses the rejections, and requests that the Examiner withdraw the objections and rejections and pass the application to allowance.

Objection to Drawings Under 37 C.F.R. § 1.83(a)

Examiner objects to the drawings under 37 CFR 1.83(a) and states the "heat-conducting device" in claims 11 and 17-18 must be shown or the feature(s) cancelled from the claims. Applicant submits the "heat-conducting device" as recited in claims 11 and 17-18 is clearly shown in Fig. 12, wherein an example of a heat-conducting device, i.e. a metal heat transfer plate (19-1), is given. However, the specification has been amended for further clarification that an example of the "heat conducting device" as recited in claims 11, and 17-18 is a metal heat transfer plate shown in Fig. 12 as reference numeral 19-1. On page 2, lines 25-26 "a heat-conducting device" has been clarified and now states "a heat-conducting device such as a metal heat-transfer plate." On page 9, lines 14-15, "metal heat transfer plate (19-1)" has been amended to state "a heat-conducting device such as a metal heat transfer plate (19-1)." Therefore, an example of the "heat-conducting device" as recited in claims 11, and 17-18 is clearly shown in Fig. 12 as a metal heat transfer plate (19-1) . Therefore, it is specifically submitted that no

changes to the drawings are required.

Claim Rejections under U.S.C. § 102(b) of Claims 1-4, 6, and 8-10

The rejection of claims 1- 4, 6, and 8-10 under 35 U.S.C. 102(b) is respectfully traversed.

1. Passage 66 of Cheon '954 Is Not a Heat-Radiating Pipe as Claimed by Applicant

Cheon '954 does not anticipate Applicants' claim 1, and claims 2-4, 6, and 8-10 by dependency, because the heat-radiating pipe in claim 1 is not disclosed in Cheon '954. Claim 1 has been amended to correct a grammatical error, but not for any reason related to patentability. Applicant's claim 1 states, "A microcomputer heat dissipation system comprising...a heat-radiating pipe bondable to a heat-radiating plate..." Examiner incorrectly argues the passage 66 of Cheon '954 is a heat-radiating pipe.

Cheon '954 discloses a heat dissipating system wherein liquid coolant traveling from at least one heat transfer device flows into a reservoir through an inlet opening. The reservoir has an upper portion and a lower portion and a passage 66 connects the two portions. Liquid coolant is directed into an inlet on the upper reservoir, through an upper portion, by and through heat gathering fins, down through the passage 66 into a lower portion, and out an outlet opening (See Cheon '954 p. 5). In Cheon '954, the passage 66 is merely a conduit for allowing liquid coolant to pass from the upper portion to the lower portion. Therefore, Applicant's claim 1 is not anticipated by Cheon'954 because the Cheon '954 passage 66 is not a heat-radiating pipe.

2. Cheon '954 Does Not Disclose a Heat-Radiating Pipe Bondable to a Heat Radiating Plate

Applicant's claim 1, and claims 2-4, 6 and 8-10 by dependency, are further not anticipated by Cheon '954 because Cheon '954 does not disclose "a heat-radiating pipe *bondable*

to a heat-radiating plate...” Even assuming *arguendo* that there is a heat-radiating pipe disclosed in Cheon ‘954 for the purpose of this argument only, there is no heat-radiating pipe directly bondable to a heat-radiating plate (also assuming *arguendo* for the purpose of this argument only that the radiator in Cheon ‘954 is a heat-radiating plate). In Cheon ‘954, coolant passes through the upstream portion of the reservoir by and through the heat gathering fins. Subsequently, the coolant flows through the passage into the downstream portion and out the outlet opening. The heat from the heat-gathering fins is transferred from the fins to the metal wall of the reservoir, to a Peltier cooling effect module, to the radiator, and into the atmospheric air (See Cheon ‘954 p. 5). The heat-radiating pipe of Cheon ‘954, assuming *arguendo* there is one, cannot possibly be bondable to the radiator because Cheon ‘954 discloses a Peltier effect cooling module disposed between the heat gathering fins and the radiator. Therefore, Applicant’s claim 1, and claims 2-4, 6, and 8 -10 by dependency are not anticipated by Cheon ‘954 because Cheon ‘954 does not disclose a heat-radiating pipe directly bondable to a heat-radiating plate .

3. **Cheon ‘954 Does Not Disclose a Pump Mounted to the Chassis by Shock-Absorbent Coils**

Due to the foregoing discussion, claim 3, by dependency on claim 1, is not anticipated by Cheon ‘954 because claim 1 is not anticipated by Cheon ‘954. However, claim 3 is further distinguishable from Cheon ‘954. The Examiner asserts that Cheon ‘954 also discloses a pump securely mounted inside the chassis by shock-absorbent coils. Applicant respectfully disagrees with the Examiner. The pump in Cheon ‘954 is not mounted inside the chassis by shock absorbent coils. The coil 94 in Cheon ‘954 mounts the motor to the casing of the reservoir. The purpose of the coil 94 in Cheon ‘954 is to “confront the magnet to allow the motor to operate in a

known manner” and not to mount the pump (See Cheon ‘954 p. 6). Therefore, Applicant’s claim 3 is also not anticipated by Cheon ‘954 because the coil 94 in Cheon ‘954 does not mount the pump to chassis, but rather mounts the motor to the casing of the reservoir.

4. **Cheon ‘954 Does Not Disclose a Heat-Radiating Plate Which is Disposed on an Outer Wall of the Chassis**

Due to the foregoing discussion, claim 8, by dependency on claim 1, and claims 9 and 10 by dependency on claim 8, are not anticipated by Cheon ‘954 because claim 1 is not anticipated by Cheon ‘954. However, claim 8 is further distinguishable from Cheon ‘954 because Cheon ‘954 does not disclose a heat-radiating plate disposed on an outer wall of the chassis. In Applicant’s invention as claimed, the heat-radiating plate is disposed on a top wall of the microcomputer chassis, or alternatively, may be located on a side wall of the chassis. In Cheon ‘954, the radiator (assuming for the purpose of this argument only that the radiator is a heat-radiating plate) is an external piece which is attached at the exterior side of the computer housing, but is not disposed on the chassis. The radiator is mounted on the Peltier cooling effect module, which is mounted on the outer metal wall of the casing. The casing assembly supports the radiator, not the chassis (See Cheon ‘954 p. 4). The radiator in Cheon ‘954 is not disposed on the outer wall of the chassis in any manner, therefore, Cheon ‘954 further does not anticipate the claims 8, and claims 9 and 10 by dependency on claim 8. Claim 8 has been amended to correct a grammatical error, but not for any reason related to patentability.

5. **Cheon ‘954 Does Not Disclose a Mounting Support Having a Recess or a Heat-Radiating Pipe Passing Through the Wall of the Chassis**

Due to the foregoing discussion, claim 9, by dependency on claim 8, is not anticipated by

Cheon '954 because claim 8 is not anticipated by Cheon '954. However, claim 9 is further distinguishable from Cheon '954 because Cheon '954 does not disclose a mounting support a recess for housing a heat-radiating plate. In Cheon '954, the casing has a rectangular external portion and a cylindrical portion that extends inwardly through the computer housing and into the interior of the computer. On the external side of the rectangular portion, the casing has an exterior metal wall, the Peltier cooling effect module, and the radiator. The radiator is secured to the Peltier cooling effect module (See Cheon '954 p. 4). The casing does not have a mounting support having a recess which can house a heat-radiating plate (assuming for the purpose of this argument only the radiator is a heat-radiating plate). Therefore, claim 9 is further distinguishable from Cheon '954 because Cheon '954 does not disclose a mounting support having a recess. Therefore, claim 9 is further distinguishable from Cheon '954 because Cheon '954 does not disclose a mounting support having a recess.

Furthermore, claim 9 is distinguishable from Cheon '954 because in Cheon '954, a heat-radiating pipe, assuming *arguendo* there is one for the purpose of this argument only, does not pass through the wall of the chassis. Cheon '954 clearly states "the reservoir has a rectangular external portion and a cylindrical portion that extends inwardly through the computer housing and into the interior of the computer" (See Cheon '954 p. 4). Therefore, claim 9 is further distinguishable from Cheon '954 because it is the reservoir housing in Cheon '954, and not a heat-radiating pipe, that extends into the wall of the chassis.

Claim Rejection under U.S.C. § 102(b) of Claims 11-20, 22, 24-28, and 30-33

The rejection of claims 11-20, 22, 24-28, and 30-33 under 35 U.S.C. 102(b) are also

respectfully traversed.

6. **Cheon '954 Does Not Disclose a Heat-Radiating Pipe Bondable to a Heat Radiating Plate**

Cheon '954 does not anticipate Applicant's claim 11 and claims 13-16, 19, 22, 24 -27,30, 31 and 33 by dependency because Cheon '954 does not disclose "a heat-radiating pipe *bondable* to a heat-radiating plate, with said heat-radiating plate disposed on the outer wall surface of a chassis." Claims 11, 12, 16, 23, 25, 28, and 29 have been amended to correct informalities, and not for any reason related to patentability. Even assuming *arguendo* that there is a heat-radiating pipe disclosed in Cheon '954 for the purpose of this argument only, there is no heat-radiating pipe directly bondable to a heat-radiating plate (also assuming *arguendo* for the purpose of this argument only that the radiator in Cheon '954 is a heat-radiating plate). In Cheon '954, coolant passes through the upstream portion of the reservoir by and through the heat gathering fins. Subsequently, the coolant flows through the passage into the downstream portion and out the outlet opening. The heat from the heat-gathering fins is transferred from the fins to the metal wall of the reservoir, to a Peltier cooling effect module, to the radiator, and into the atmospheric air (See Cheon '954 p. 5). The heat-radiating pipe of Cheon '954, assuming *arguendo* there is one, cannot possibly be bondable to the radiator because Cheon '954 discloses a Peltier effect cooling module disposed between the heat gathering fins and the radiator. Therefore, Applicant's claim 11 and claims 13-16, 19, 22, 24 -27,30, 31 and 33 by dependency are not anticipated by Cheon '954.

7. **Cheon '954 Does Not Disclose a Circuit Board Connected to a Connector Socket nor a Plug End Connected by a Wire Belt to the Location Where the High-Powered**

Transistors are Soldered to the Power Supply Circuit Board.

Due to the foregoing discussion, claims 15 and 16, by dependency on claim 11, are not anticipated by Cheon '954 because claim 11 is not anticipated by Cheon '954. However, claims 15 and 16 are further distinguishable from Cheon '954 because Cheon '954 does not disclose the following limitation. Claims 15 and 16 contain the limitation that the circuit board of the microcomputer is connected via a circuit to a connector socket. There is also a plug end, connected to the socket, which is also connected by a wire belt to a location where the high power transistors are soldered to the power supply circuit board. Cheon '954 does not disclose any such limitation, therefore, claims 15 and 16 are further not anticipated by Cheon '954. Claims 15 and 16 have been amended to correct informalities, not for any reason related to patentability.

8. Cheon '954 Does Not Disclose a Mounting Support Having a Recess

Due to the foregoing discussion, claims 26 and 31 by dependency on claim 11, are not anticipated by Cheon '954 because claims 26 and 31 are not anticipated by Cheon '954. However, claims 26 and 31 are further distinguishable from Cheon '954 because Cheon '954 does not disclose a mounting support a recess for housing a heat-radiating plate. In Cheon '954, the casing has a rectangular external portion and a cylindrical portion that extends inwardly through the computer housing and into the interior of the computer. On the external side of the rectangular portion, the casing has an exterior metal wall, the Peltier cooling effect module, and the radiator. The radiator is secured to the Peltier cooling effect module (See Cheon '954 p. 4). The casing does not have a mounting support having a recess which can house a heat-radiating

plate (assuming for the purpose of this argument only the radiator is a heat-radiating plate).

Therefore, claim 9 is further distinguishable from Cheon '954 because Cheon '954 does not disclose a mounting support having a recess. Therefore, claims 25 and 26 are further not anticipated by Cheon '954 because Cheon '954 does not disclose a mounting support having a recess.

9. **Cheon '954 Does Not Disclose a Pump Mounted to the Chassis by Shock-Absorbent Coils**

Due to the foregoing discussion, claim 28, by dependency on claim 11, is not anticipated by Cheon '954 because claim 11 is not anticipated by Cheon '954. However, claim 28 is further distinguishable from Cheon '954 because Cheon '954 does not disclose a pump securely mounted inside the chassis by a shock absorbing device. The Examiner asserts that Cheon '954 also discloses a pump securely mounted inside the chassis by shock-absorbent coils. Applicant respectfully disagrees with the Examiner. The pump in Cheon '954 is not mounted inside the chassis by shock absorbent coils. The coil 94 in Cheon '954 mounts the motor to the casing of the reservoir. The purpose of the coil 94 in Cheon '954 is to "confront the magnet to allow the motor to operate in a known manner" and not to mount the pump (See Cheon '954 p. 6). Therefore, Applicant's claim 3 is also not anticipated by Cheon '954 because the coil 94 in Cheon '954 does not mount the pump to chassis, but rather mounts the motor to the casing of the reservoir. Additionally, in Cheon '954, the pump is mounted in the reservoir casing, not to the chassis.

10. **Cheon '954 Does Not Disclose a Heat-Radiating Plate which is Disposed on an Outer Wall of a Chassis**

Due to the foregoing discussion, claim 30, by dependency on claim 11, is not anticipated by Cheon '954 because claim 11 is not anticipated by Cheon '954. However, claim 30, and claim 32 by dependency on claim 30, are further distinguishable from Cheon '954. . Cheon '954 does not disclose a heat-radiating plate disposed on an outer wall of the chassis. In Applicant's invention as claimed, the heat-radiating plate is disposed on a top wall of the microcomputer chassis, or alternatively, may be located on a side wall of the chassis. In Cheon '954, the radiator (assuming for the purpose of this argument only that the radiator is a heat-radiating plate) is an external piece which is attached at the exterior side of the computer housing, but is not disposed on the chassis. The radiator is mounted on the Peltier cooling effect module, which is mounted on the outer metal wall of the casing. The casing assembly supports the radiator, not the chassis (See Cheon '954 p. 4). The radiator in Cheon '954 is not disposed on the outer wall of the chassis, therefore, Cheon '954 further does not anticipate claim 30 or claim 32 by dependency on claim 30.

Thus, Applicant submits that claims 1-33 are in condition for allowance, and respectfully requests that the Examiner withdraw the rejection and pass the application to issuance.

Rejection of Claims 5,7,21,23 and 29 under 35 U.S.C. 103(a) as Being Unpatentable Over Cheon '954 in view of Donahoe et al., U.S. Patent No. 6,333,849 B1

The Examiner asserts that Cheon '954 discloses the claimed invention except the heat-absorbing units being disposed in fluid circulating via series and parallel connection. The Examiner further states that Donahoe et al., U.S. Patent No. 6,333,849 ("Donahoe '849") teaches heat absorbing units being disposed in communication with the fluid circulating unit via series and parallel connection. The Examiner concludes it would have been obvious to one skilled in

the art at the time of invention to modify Cheon '954 with the heat-absorbing units taught by Donahoe '849 such that the influence between heat-generating components would be minimized.

First, in view of the foregoing discussion, Cheon '954 does not disclose a heat-radiating pipe bondable to a heat-radiating plate, does not disclose a pump mounted to the chassis by shock absorbent coils, does not disclose a heat-radiating plate disposed on the outer wall of a chassis, does not disclose a heat-radiating plate disposed within a mounting support having a recess, and Cheon '954 does not disclose a circuit board connected to a connector socket nor a plug end connected by a wire belt to a location where high-powered transistors are soldered to a power supply circuit board. In view of these differences between Applicant's invention as claimed and Cheon '954, Applicant submits for these reasons alone Applicant's invention as claimed is nonobvious in view of Cheon '954 and Donahoe '849.

Furthermore, Applicant's invention as claimed is nonobvious in view of Cheon '954 and Donahoe '849 because if one were to modify Cheon '954 with the heat absorbing units taught by Donahoe '849, one would not arrive at the Applicant's invention as claimed. Donahoe '849 teaches an apparatus for cooling a vertical array of hard disk drives which are vertically stacked upon each other. There are flexible heat exchangers made of a hollow, relatively thin, sheet-like panel in rectangular form which are disposed in between the disk drives. The heat exchangers have an inlet and an outlet for flowing liquid coolant therethrough. There is further an inlet and an outlet manifold. The inlet manifold is connected to the outlet of a pump. Coolant flows through the inlet manifold to the inlets of the heat exchangers. An outlet manifold collects the coolant from the outlets of the flexible heat exchangers and is connected to the inlet of an air side

heat exchanger where heat transfer takes place.

If one were to modify Cheon '954 such that the heat exchangers of Cheon '954 were in parallel connection with one another, one would not arrive at the Applicant's invention as claimed. The Applicant's invention as claimed uses a different means of reducing the influence between heat generating components that is independent of whether the heat exchangers are in series or in parallel. In Cheon '954, the microcomputer heat dissipation system is mounted on the computer power-supply housing. The pump, water tank, and pipe of the heat-dissipation system are supported by the power-supply housing. This design is not able to expand the area of the heat dissipation system, and its effect can only meet the heat dissipation requirement for early computers. In contrast, Applicant's invention as claimed maximizes the surface area of the heat dissipation system by utilizing the full area of a top or side of the chassis to mount a heat-radiating pipe bondable to a heat-radiating plate. Therefore, if one were to modify the Cheon '954 with the heat-absorbing units in parallel taught by Donahoe '849, one would not arrive at the Applicant's invention as claimed.

Also, in Cheon '954, the heat gathering fins are mounted inside a water reservoir, which differs from the heat-radiating pipe in the Applicant's invention as claimed wherein the heat-radiating pipe is disposed within a recess of a mounting support on a top or side of the chassis. As a result, Cheon '954 does not utilize the full surface of a microcomputer to dissipate heat. In contrast, the Applicant's heat-radiating pipe allows full use of the microcomputer surface to dissipate heat. Therefore, the heat dissipation system of the present invention has a greater surface area, without increasing volume and thickness, than Cheon '954. Therefore, if one were

to modify Cheon '954 with the heat-absorbing components of Donahoe '849, one still would not have a heat dissipation system with as great a surface area or cooling efficiency as the Applicant's invention as claimed. Thus, there is no motivation within the cited references to combine them as suggested by the Examiner, and even if they were combined, they would not produce the Applicant's invention as claimed.

Thus, Applicant submits that claims 5, 7, 21, 23, and 29 are nonobvious over Cheon '954 in view of Donahoe '849.

Conclusion

In view of the above Amendments and Remarks, Applicant submits that the present application is in condition for allowance, and seeks early indication of the same. If the Examiner requires further information with respect to this application, the Examiner is invited to contact Applicant's attorney at (847) 537-3537 for a telephonic interview.

Respectfully submitted,

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By: Marc D. Machtinger

Marc D. Machtinger, Reg. No. 43,434
Law Office of Marc D. Machtinger, Ltd.
750 W. Lake Cook Road, Suite 350
Buffalo Grove, Illinois 60089
Phone: (847) 537-3537
Attorney for Applicant
Customer No. 30358

CERTIFICATE OF MAILING (37 C.F.R. § 1.8a)

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2003 by: Marc D. Machtinger
Marc D. Machtinger, Reg. No. 43,434